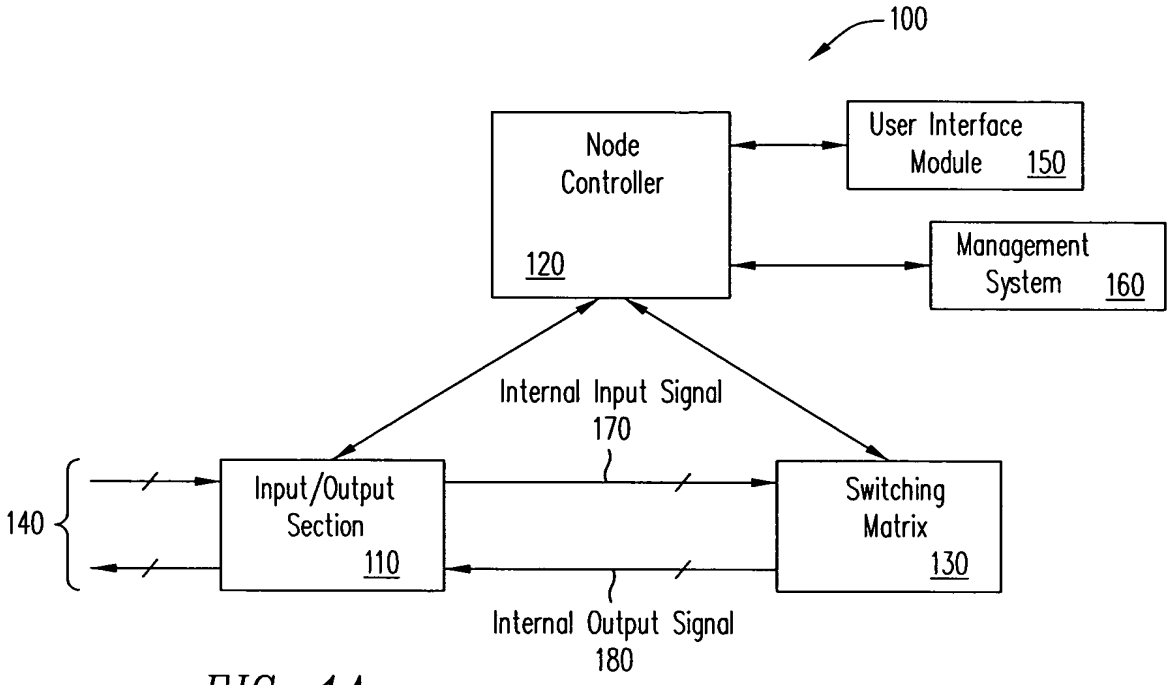

100
Node Controller
120
User Interface Module 150
Management System 160
Internal Input Signal 170
140
Input/Output Section 110
Switching Matrix 130
Internal Output Signal 180

FIG. 1A

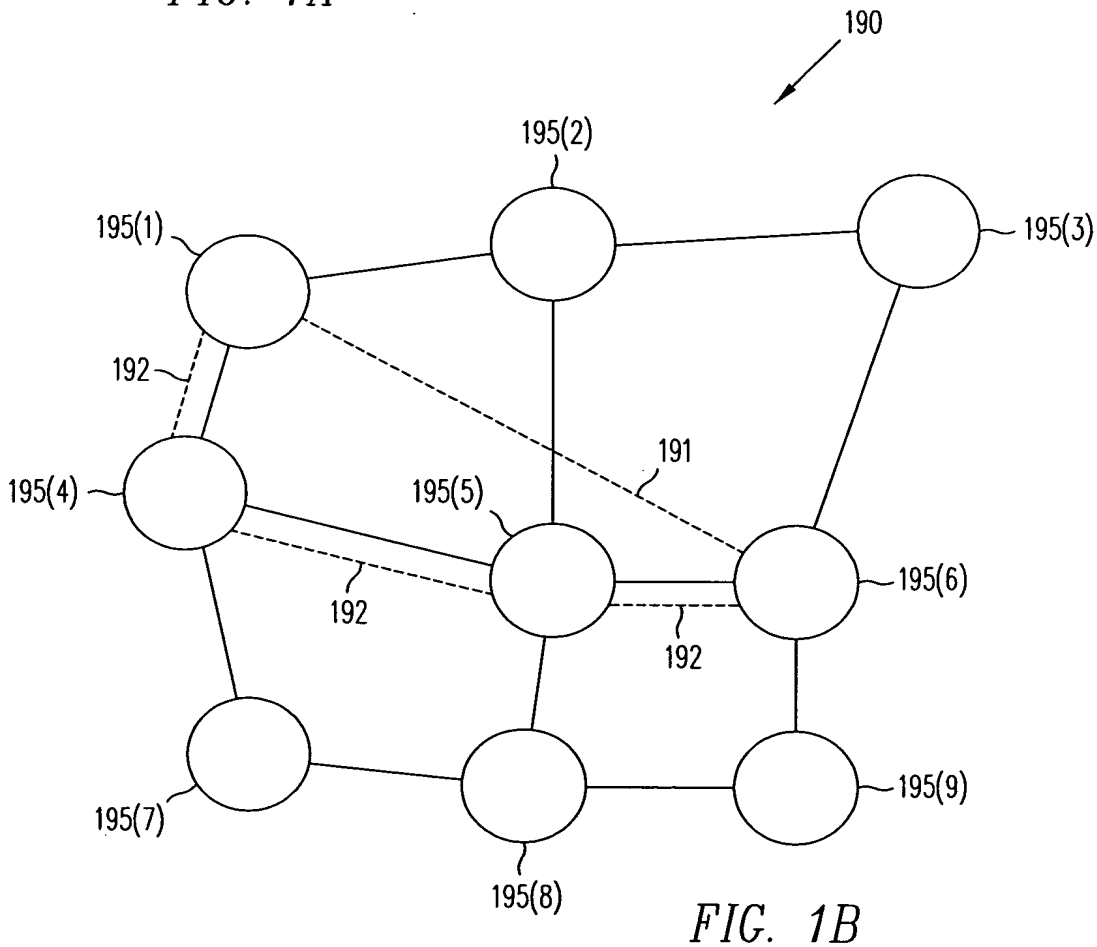

190
195(1)
195(2)
195(3)
192
191
195(4)
195(5)
195(6)
192
192
195(7)
195(8)
195(9)

FIG. 1B

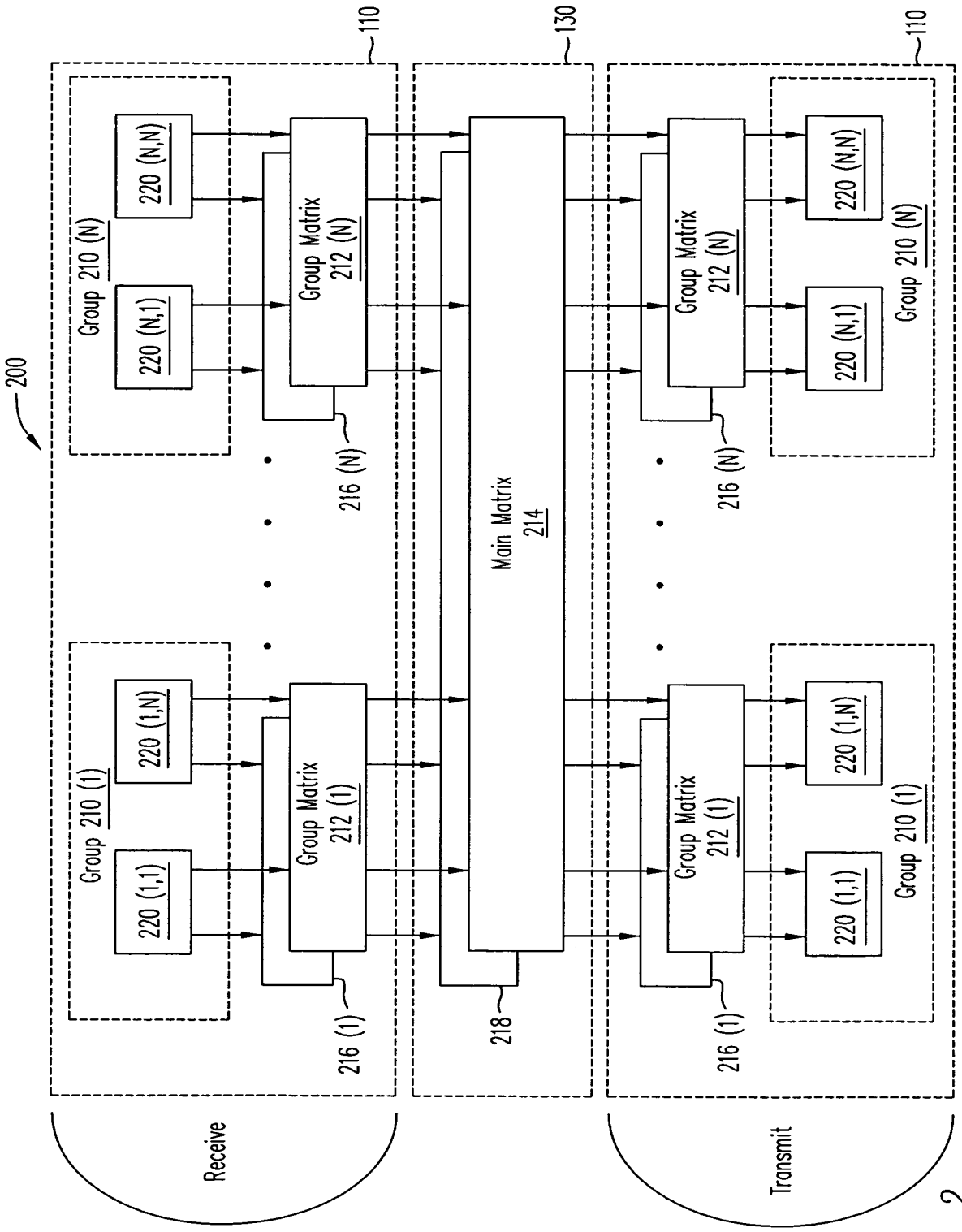
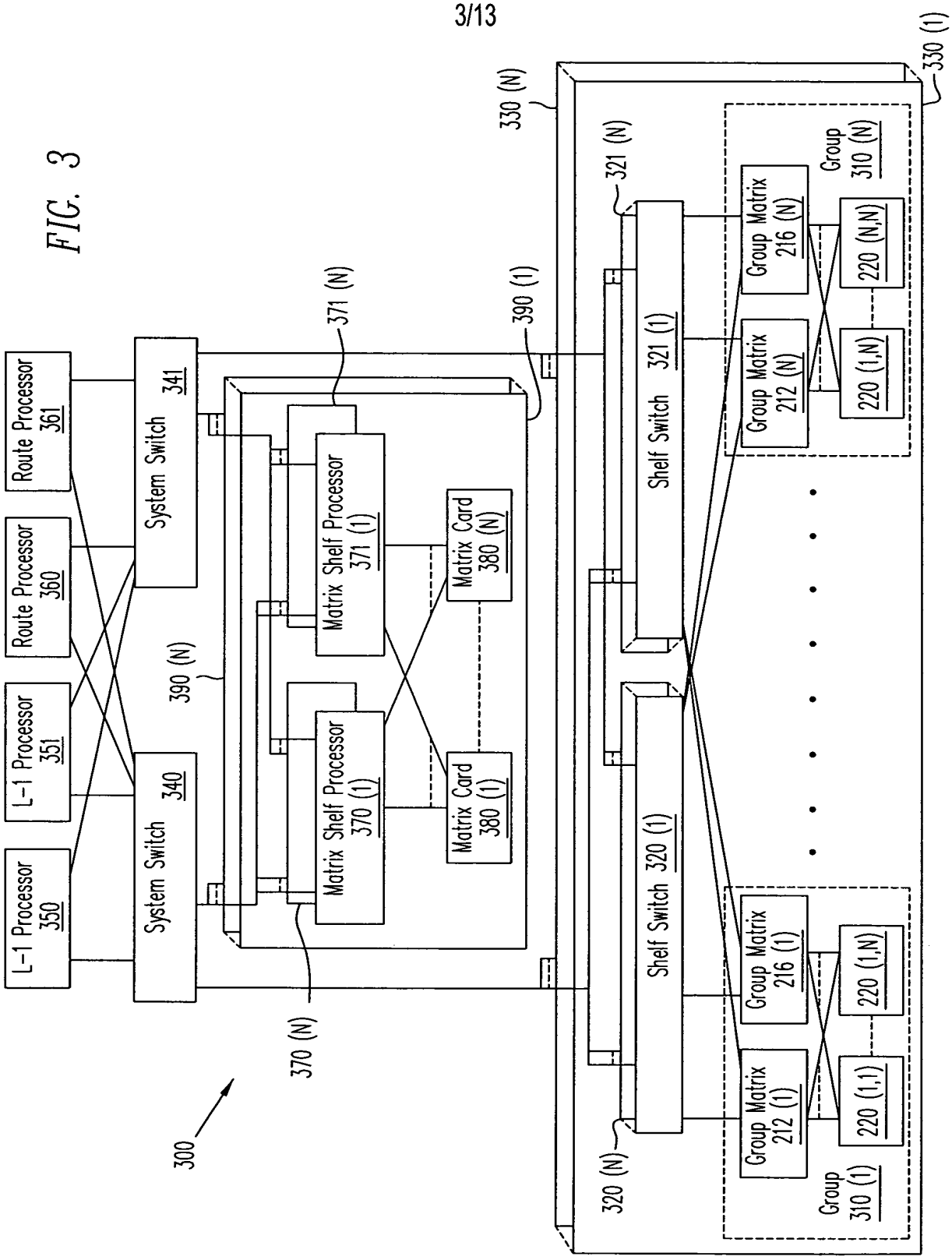

200
110
130
110
Group 210 (N)
220 (N,N)
220 (N,1)
Group Matrix 212 (N)
216 (N)
Main Matrix 214
218
Group 210 (1)
220 (1,N)
220 (1,1)
Group Matrix 212 (1)
216 (1)
Receive
Transmit

FIG. 2

FIG. 3


300
Route Processor 361
Route Processor 360
L-1 Processor 351
L-1 Processor 350
System Switch 341
System Switch 340
390 (N)
371 (N)
370 (N)
Matrix Shelf Processor 371 (1)
Matrix Shelf Processor 370 (1)
Matrix Card 380 (N)
Matrix Card 380 (1)
390 (1)
330 (N)
330 (1)
321 (N)
320 (N)
Shelf Switch 321 (1)
Shelf Switch 320 (1)
Group Matrix 216 (N)
Group Matrix 212 (N)
Group Matrix 216 (1)
Group Matrix 212 (1)
220 (N,N)
220 (1,N)
220 (1,1)
Group 310 (N)
Group 310 (1)

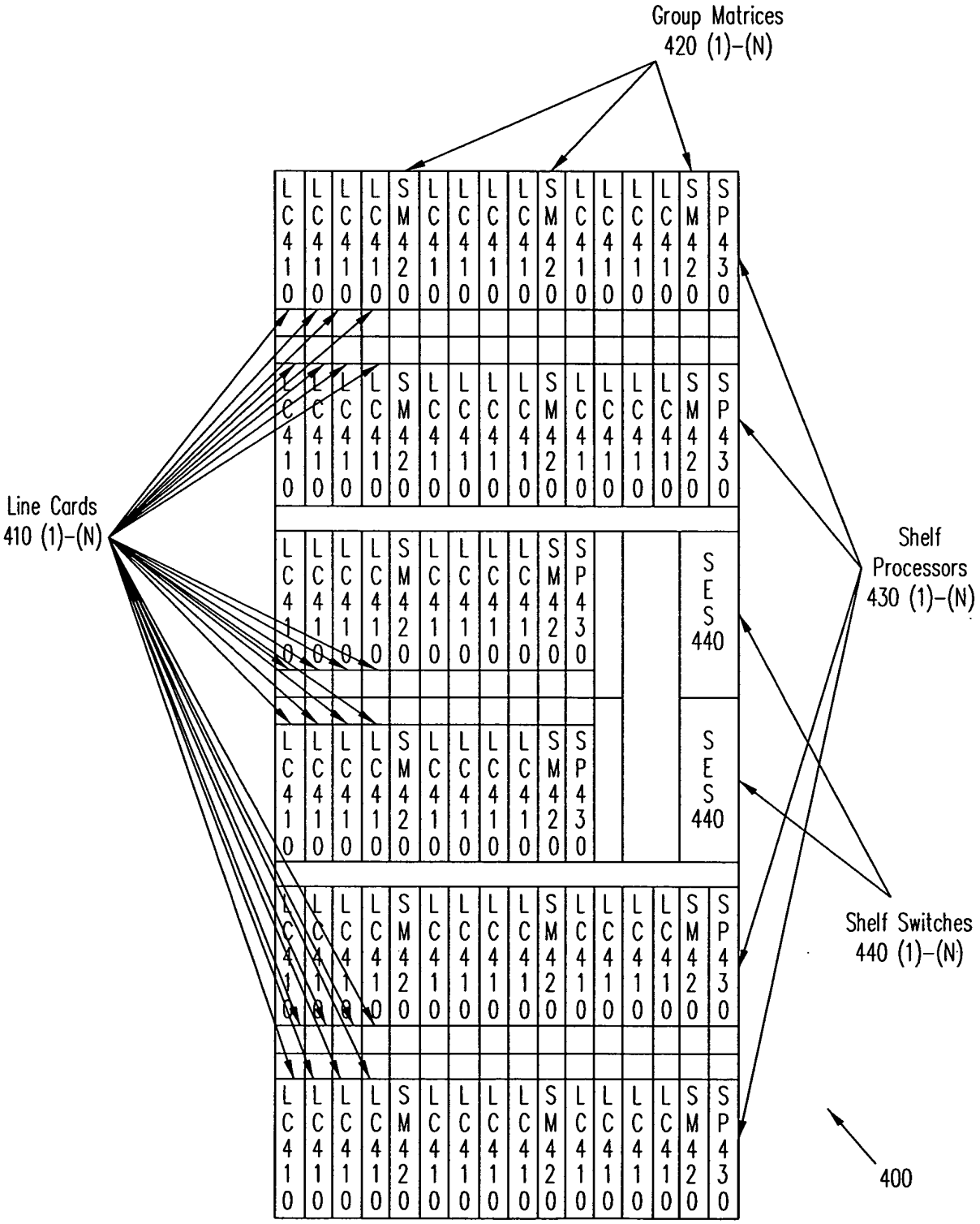

Group Matrices
420 (1)-(N)
Line Cards
410 (1)-(N)
Shelf
Processors
430 (1)-(N)
Shelf Switches
440 (1)-(N)
SES
440
400

FIG. 4

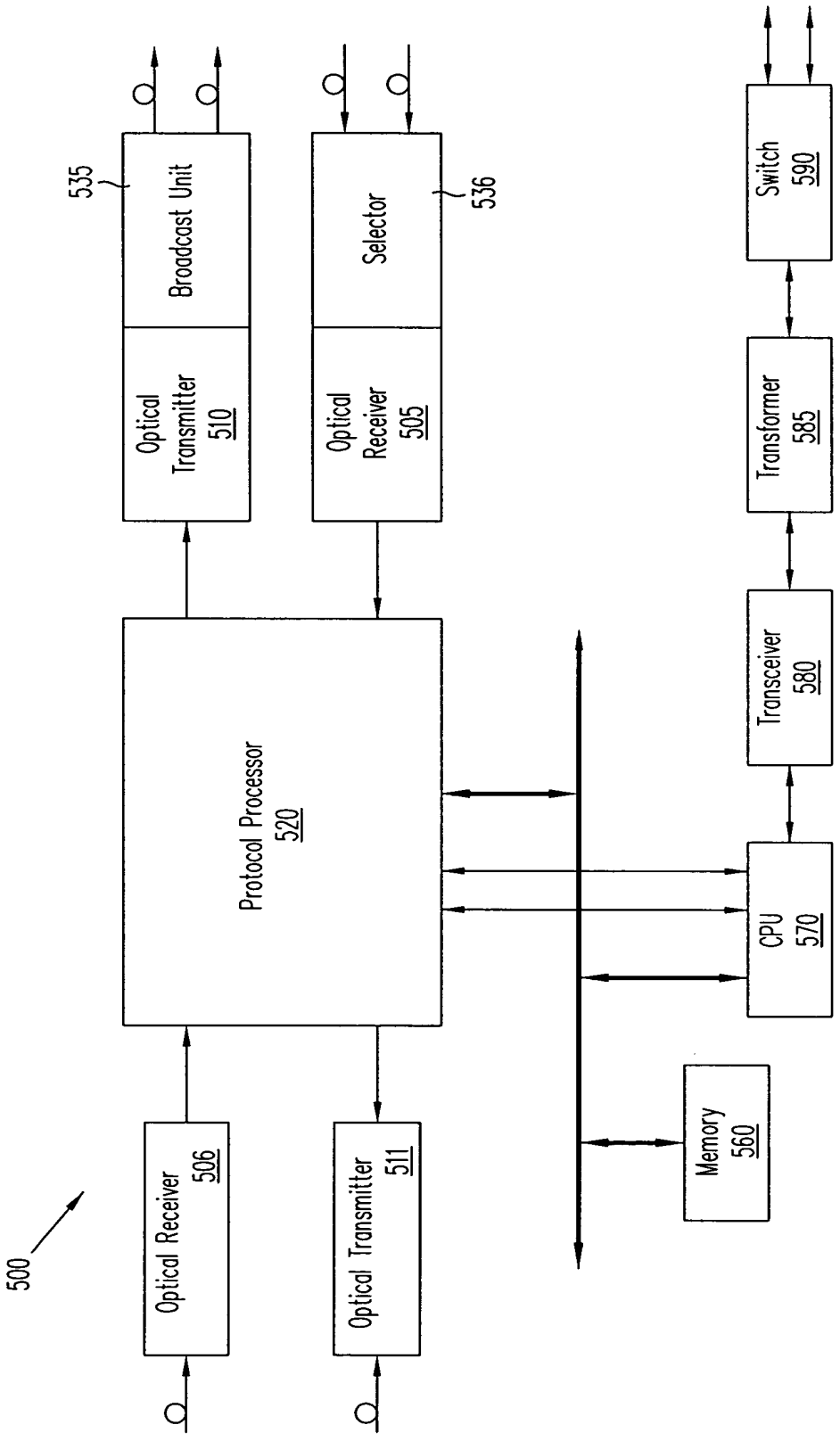

500
Optical Receiver 506
Optical Transmitter 511
Protocol Processor 520
Optical Transmitter 510
Broadcast Unit
535
Optical Receiver 505
Selector
536
Memory 560
CPU 570
Transceiver 580
Transformer 585
Switch 590

FIG. 5

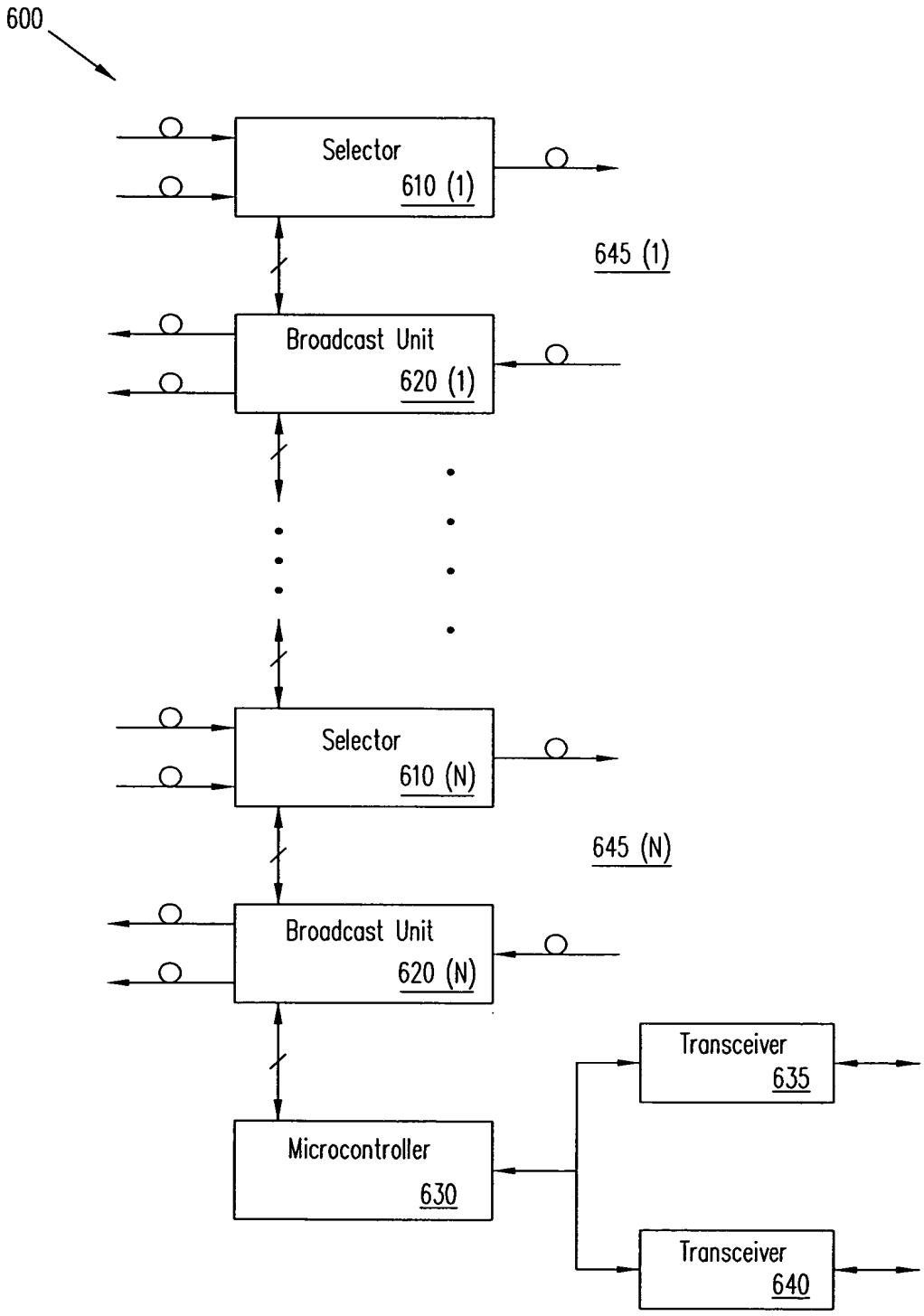

600
Selector
610 (1)
645 (1)
Broadcast Unit
620 (1)
Selector
610 (N)
645 (N)
Broadcast Unit
620 (N)
Transceiver
635
Microcontroller
630
Transceiver
640

FIG. 6

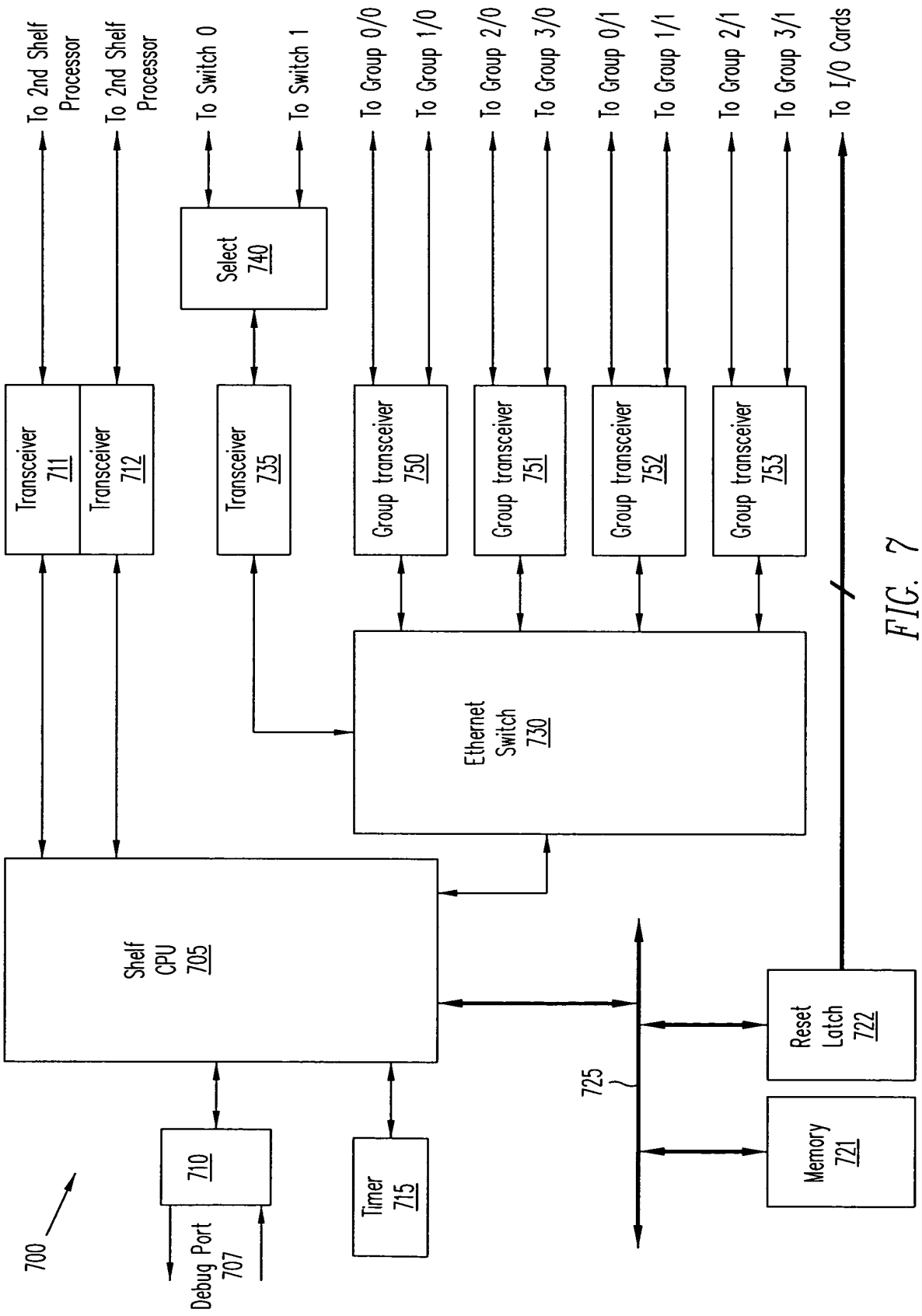

To 2nd Shelf Processor
To 2nd Shelf Processor
To Switch 0
To Switch 1
To Group 0/0
To Group 1/0
To Group 2/0
To Group 3/0
To Group 0/1
To Group 1/1
To Group 2/1
To Group 3/1
To I/O Cards
Select 740
Transceiver 711
Transceiver 712
Transceiver 735
Group transceiver 750
Group transceiver 751
Group transceiver 752
Group transceiver 753
Ethernet Switch 730
Shelf CPU 705
Reset Latch 722
Memory 721
725
710
Debug Port 707
Timer 715
700

FIG. 7

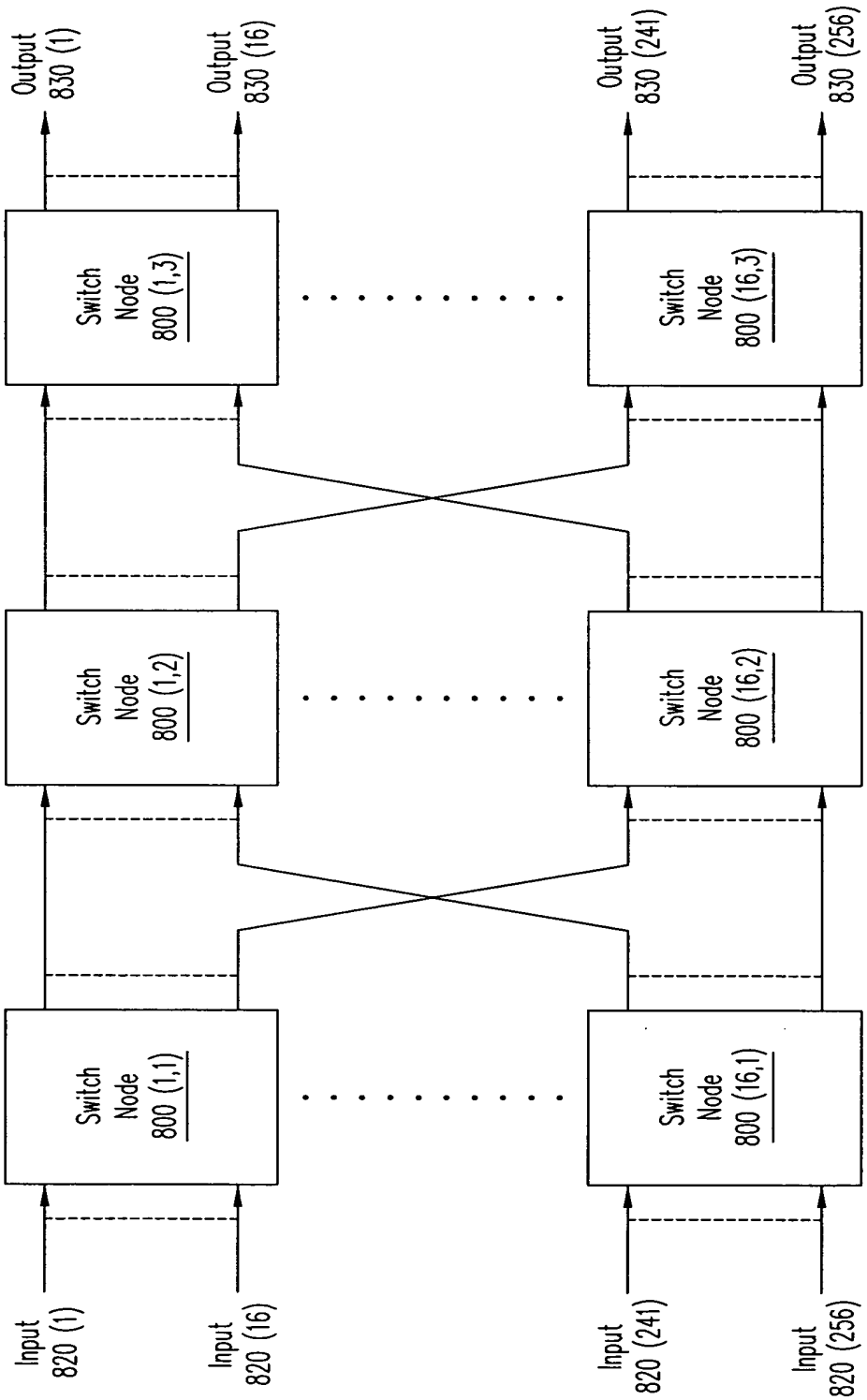

Output 830 (1)
Output 830 (16)
Output 830 (241)
Output 830 (256)
Switch Node 800 (1,3)
Switch Node 800 (16,3)
Switch Node 800 (1,2)
Switch Node 800 (16,2)
Switch Node 800 (1,1)
Switch Node 800 (16,1)
Input 820 (1)
Input 820 (16)
Input 820 (241)
Input 820 (256)

FIG. 8

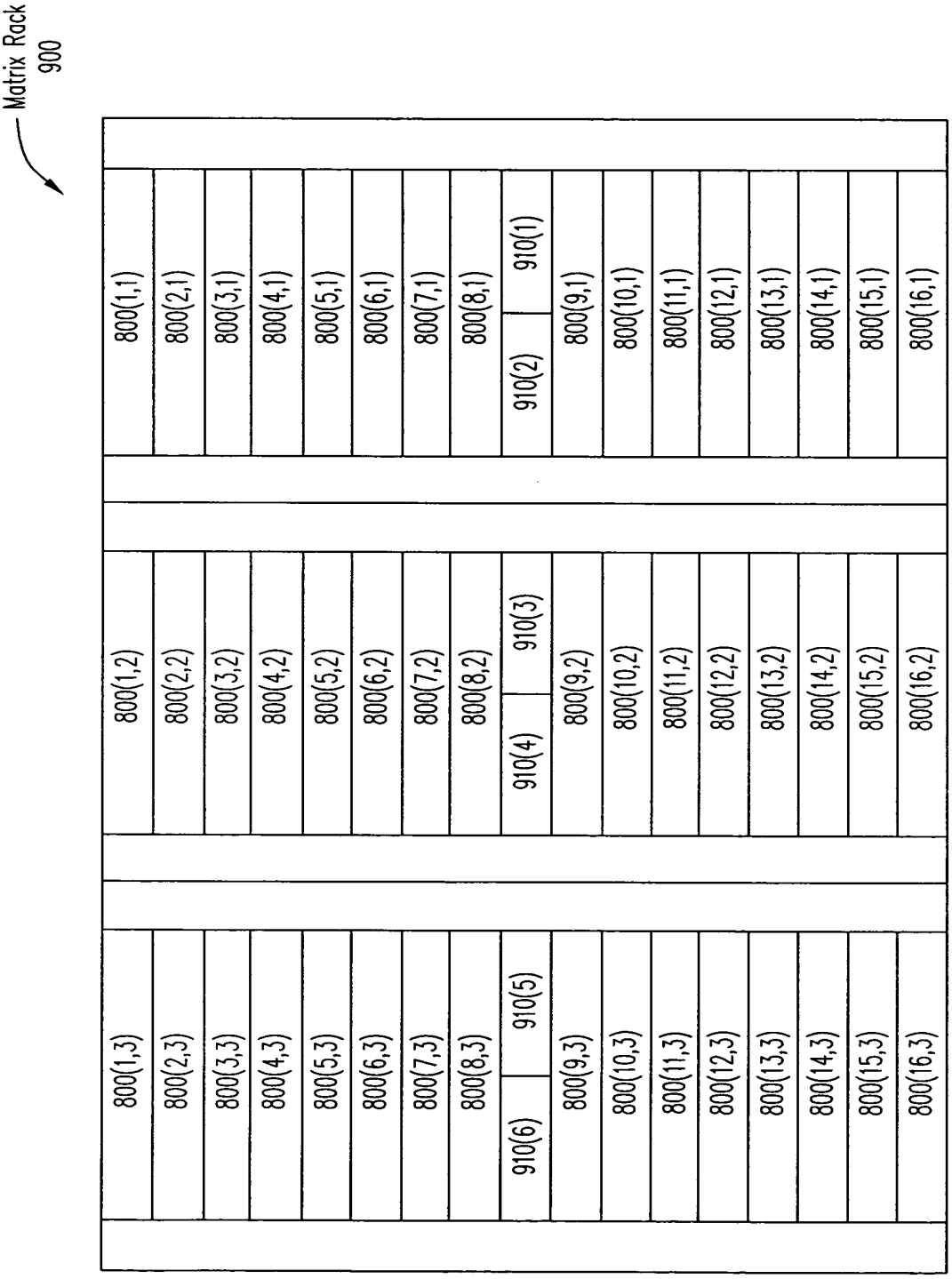

Matrix Rack
900
800(1,1)
800(2,1)
800(3,1)
800(4,1)
800(5,1)
800(6,1)
800(7,1)
800(8,1)
910(2)
910(1)
800(9,1)
800(10,1)
800(11,1)
800(12,1)
800(13,1)
800(14,1)
800(15,1)
800(16,1)
800(1,2)
800(2,2)
800(3,2)
800(4,2)
800(5,2)
800(6,2)
800(7,2)
800(8,2)
910(4)
910(3)
800(9,2)
800(10,2)
800(11,2)
800(12,2)
800(13,2)
800(14,2)
800(15,2)
800(16,2)
800(1,3)
800(2,3)
800(3,3)
800(4,3)
800(5,3)
800(6,3)
800(7,3)
800(8,3)
910(6)
910(5)
800(9,3)
800(10,3)
800(11,3)
800(12,3)
800(13,3)
800(14,3)
800(15,3)
800(16,3)

FIG. 9

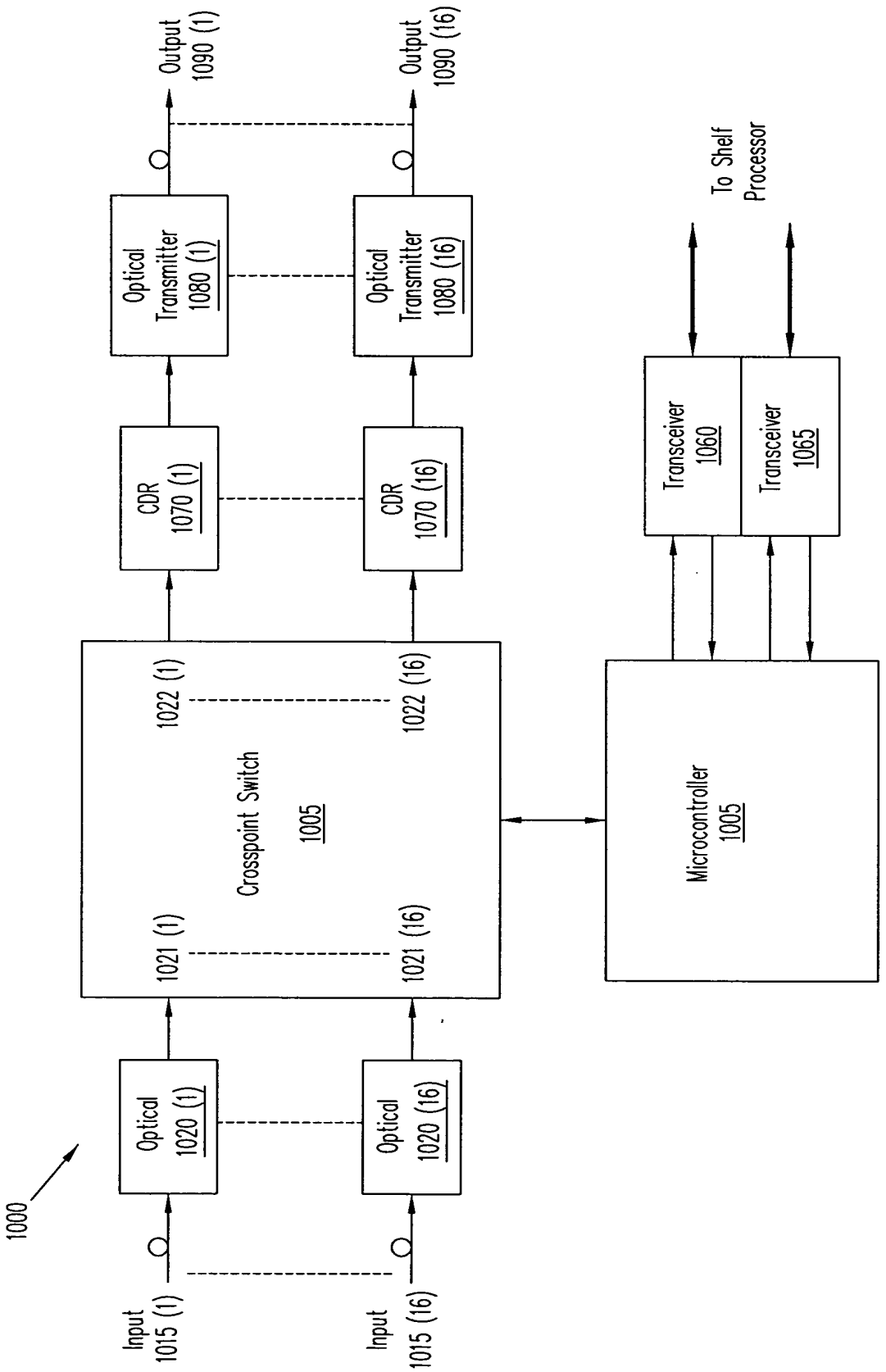

1000
Input 1015 (1)
Input 1015 (16)
Optical 1020 (1)
Optical 1020 (16)
1021 (1)
1021 (16)
Crosspoint Switch 1005
1022 (1)
1022 (16)
CDR 1070 (1)
CDR 1070 (16)
Optical Transmitter 1080 (1)
Optical Transmitter 1080 (16)
Output 1090 (1)
Output 1090 (16)
Transceiver 1060
Transceiver 1065
To Shelf Processor
Microcontroller 1005

FIG. 10

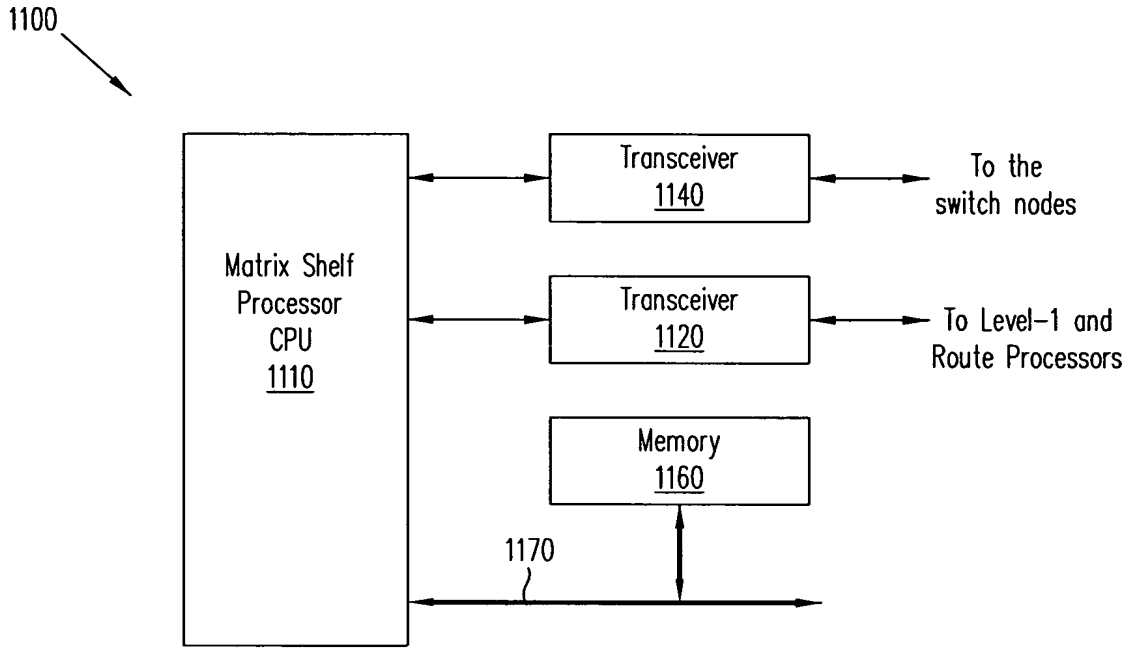

1100
Matrix Shelf Processor CPU 1110
Transceiver 1140
To the switch nodes
Transceiver 1120
To Level-1 and Route Processors
Memory 1160
1170

FIG. 11

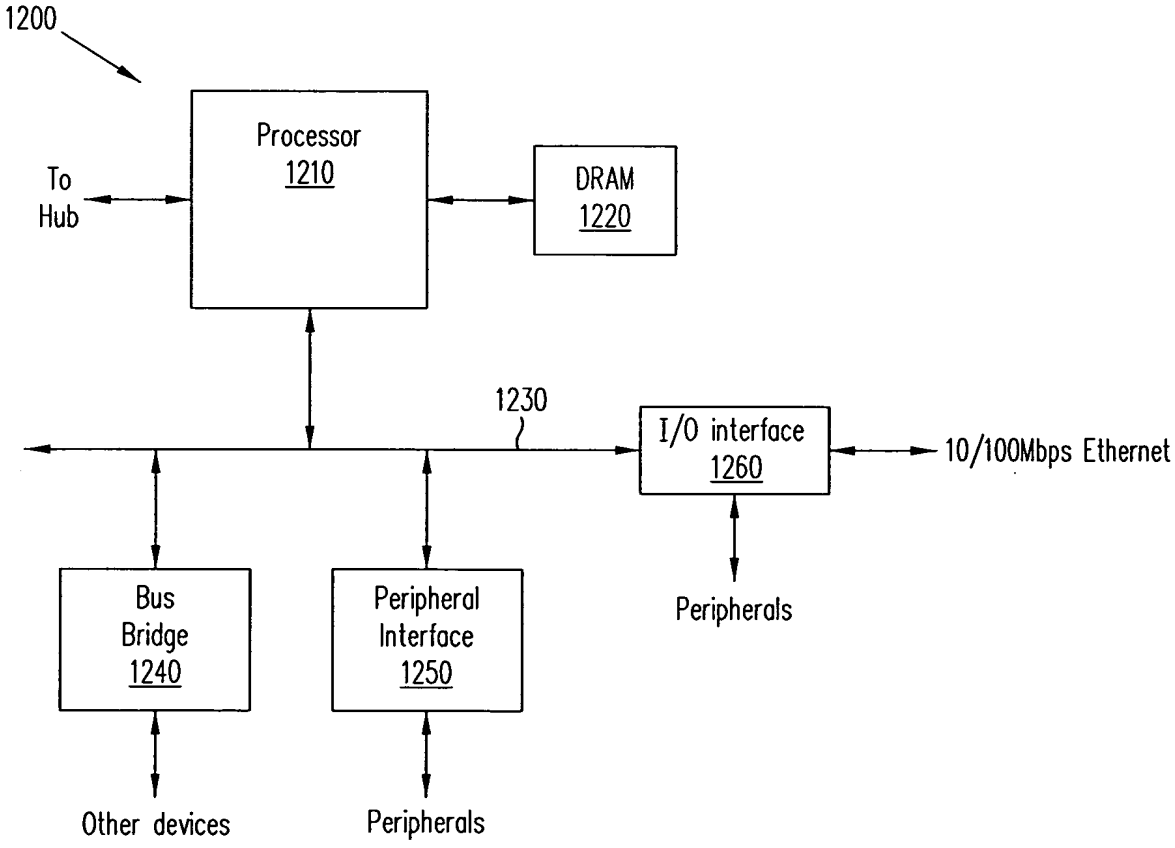

1200
Processor 1210
To Hub
DRAM 1220
1230
I/O interface 1260
10/100Mbps Ethernet
Peripherals
Bus Bridge 1240
Peripheral Interface 1250
Other devices
Peripherals

FIG. 12

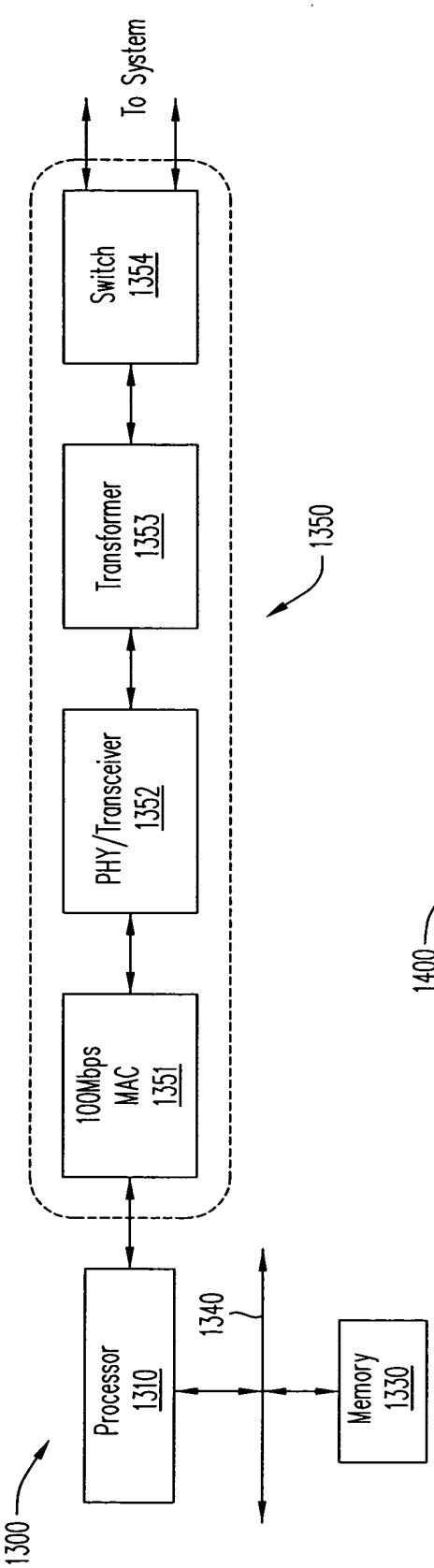

1300
Processor 1310
1340
Memory 1330
100Mbps MAC 1351
PHY/Transceiver 1352
Transformer 1353
Switch 1354
To System
1350

FIG. 13

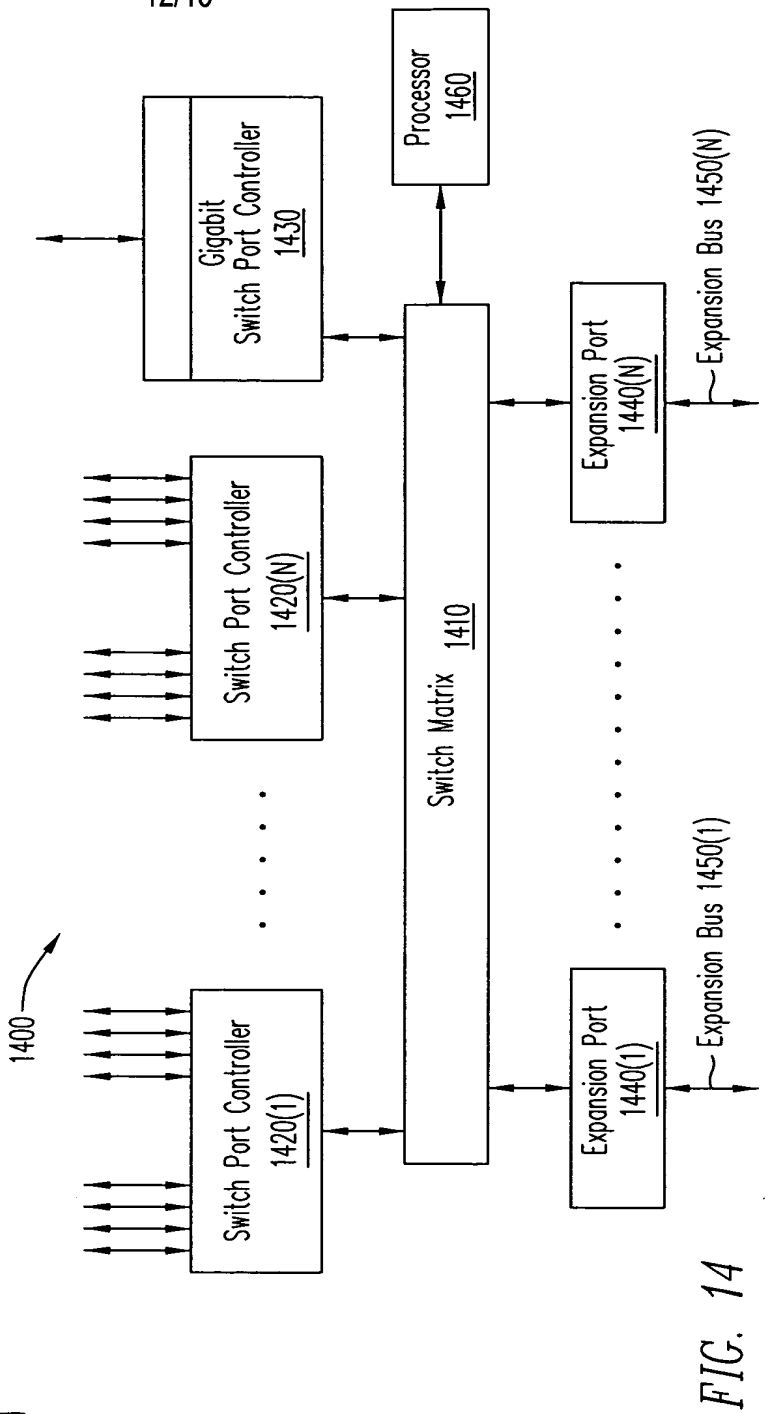

1400
Switch Port Controller 1420(1)
Switch Port Controller 1420(N)
Switch Matrix 1410
Gigabit Switch Port Controller 1430
Processor 1460
Expansion Port 1440(1)
Expansion Port 1440(N)
Expansion Bus 1450(1)
Expansion Bus 1450(N)

FIG. 14

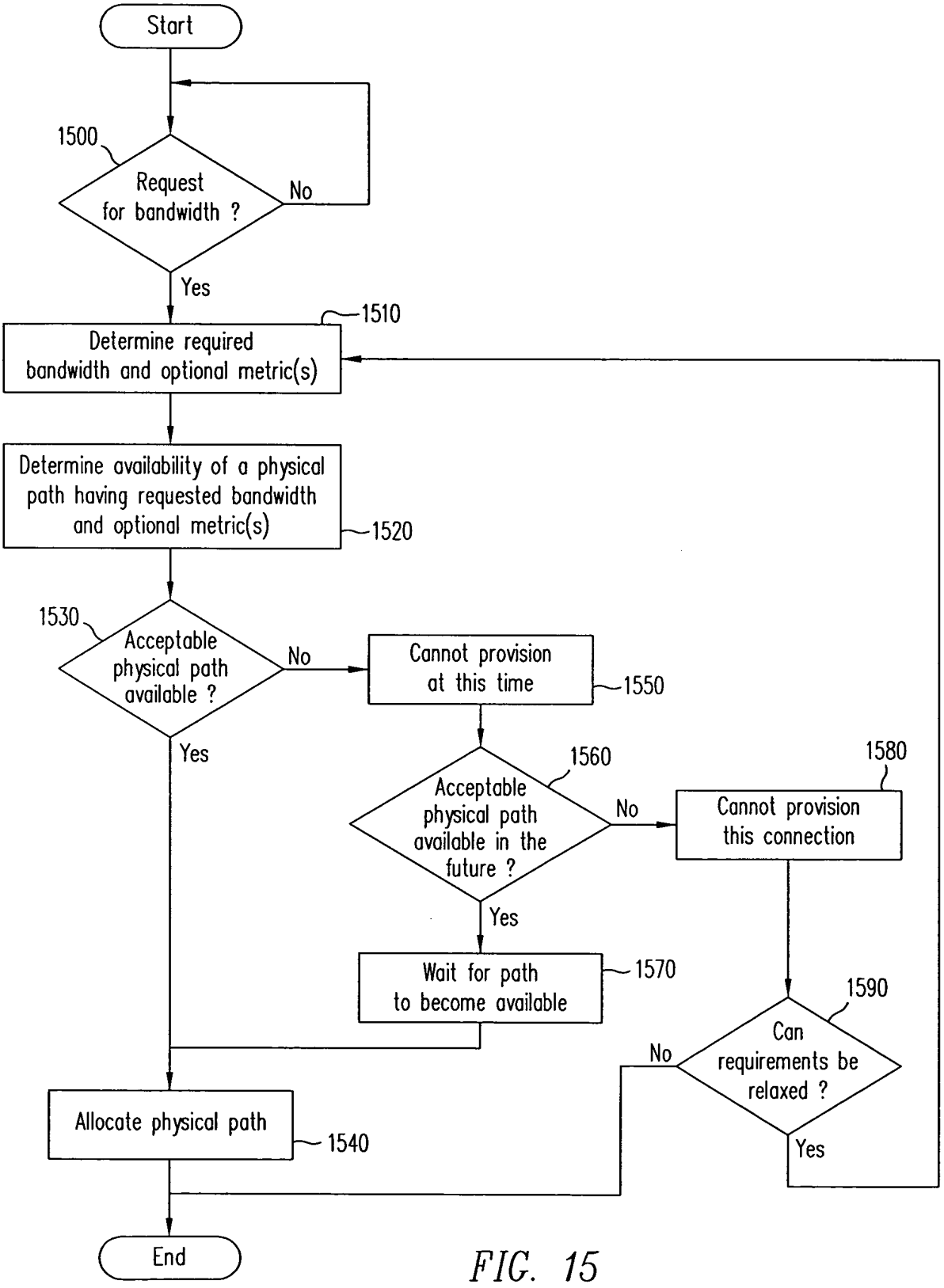

Start
1500
Request for bandwidth ?
No
Yes
1510
Determine required bandwidth and optional metric(s)
Determine availability of a physical path having requested bandwidth and optional metric(s)
1520
1530
Acceptable physical path available ?
No
Cannot provision at this time
1550
Yes
1560
Acceptable physical path available in the future ?
No
1580
Cannot provision this connection
Yes
Wait for path to become available
1570
1590
Can requirements be relaxed ?
No
Yes
Allocate physical path
1540
End

FIG. 15